Benign fibrous histiocytoma of the skull base

Case report

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✓The authors report the case of benign fibrous histiocytoma (BFH) of the skull base in an 11-month-old girl. During draining for a middle ear infection, the child was noted to have an anomalous mass in the skull base. On magnetic resonance imaging studies a soft-tissue mass of the skull base primarily involving the regions of the temporal and occipital bones was discovered. Results of a surgical biopsy were consistent with BFH. At the most recent follow-up examination—18 months postoperatively—the child was noted to be asymptomatic with no gross increase in tumor size.

KEY WORDS • cranium • soft tissue • muscle • fibrous histiocytoma • pediatric neurosurgery

SKULL base masses in infants are rare. Tumor types include fibrous dysplasia, esthesioneuroblastoma, craniopharyngioma, juvenile nasopharyngeal angiofibroma, cholesteatoma, chordoma, chondrosarcoma, and Ewing sarcoma. Outcomes in this population may be better than those in adults harboring the same lesion. We report on an infant with an incidentally found mass of the skull base.

Case Report

Presentation and Examination. An anomalous mass was noted during drainage of a middle ear infection in this 11-month-old girl. Biopsy sampling results were nondiagnostic, and the infant had no obvious symptoms related to the lesion. Subsequent magnetic resonance and computed tomography imaging revealed a soft-tissue mass of the skull base primarily involving the temporal and occipital bone regions (Fig. 1). Physical examination results were nondiagnostic.

Operation and Postoperative Course. Surgical biopsy was performed via a paramedian suboccipital approach. After dissecting through the trapezius and splenius capitis muscles, a golden-yellow mass could be seen emanating from between the muscle fibers of the semispinalis capitis. On histological examination, the specimen was noted to have spindled and epithelioid cells set within a network of small blood vessels. Some tumor cells had vesicular nuclei, wispy eosinophilic cytoplasms containing lipid vacuoles, and indistinct cell borders (Fig. 2A). No mitotic activity or necrosis was noted. Immunohistochemical staining for vimentin, factor XIIIa, and fascin showed intense cytoplasmic immunoreactivity (Fig. 2B–D). Fine granular cytoplasmic staining with the histiocyte markers CD68 and 1-antitrypsin was also demonstrated in the tumor cells. The tumor cells did not stain for S100 protein. Table 1 lists the immunohistochemical assays performed for this specimen. The pathological findings were consistent with those of a BFH. At the last follow up 18 months postoperatively, the child remained asymptomatic and no gross increase in tumor size was observed. She was achieving normal developmental milestones and had no neurological deficits.

Discussion

First described in 1967 by Stout and Lattes, BFHs (atypical fibroxanthomas) are soft-tissue neoplasms that commonly arise on sun-exposed skin. These lesions are more
common in males (male/female ratio 2.5:1) and occur in patients at a mean age of 37 years. Benign fibrous histiocytomas appearing at sites other than skin are very rare and include the retroperitoneum and trachea. Involvement of the head is extremely uncommon, with only approximately 45 cases reported, most involving the facial region. Heo and colleagues described a patient with a mandibular BFH. Lesica et al. reported a lesion of the orbital portion of the ethmoid sinus that recurred 9 years after the initial resection. Barney found a BFH involving the temporal bone near the external auditory canal and jugular fossa; this patient underwent a subtotal temporal bone resection. In their review of 18 cases of BFH involving the head and neck, Bielamowicz et al. reported an 11% recurrence rate after local excision.

**Fig. 1.** Left: Axial computed tomography scan demonstrating the soft-tissue mass primarily over the basiocciput (arrow). Right: Coronal magnetic resonance image showing the same mass involving the left temporal region (hyperintense region).

**Fig. 2.** Photomicrographs showing a BFH composed of scattered tumor cells with an appearance similar to lipid. H & E (A). Intense staining of the tumor cells for vimentin (B), factor XIIIa (C), and fascin (D). Original magnifications × 330 (A) and × 132 (B–D).
Benign fibrous histiocytoma

This case is very unusual in that the patient was a female infant and the tumor involved the skull base. We chose to perform biopsy sampling on the lesion via a posterior cranio-cervical approach because this approach seemed the most conservative, especially given that the patient displayed no symptoms. Although it is a rare entity, clinicians should consider BFH in the differential diagnosis of all skull base tumors.

References


* All samples were incubated at room temperature for 30 minutes. Abbreviations: EDTA = ethylenediaminetetraacetic acid; HIER = heat-induced epitope retrieval. + = positive; − = negative.